Using Canines in Source Detection of Indoor Air Pollutants

Sandra L. Bird
Environmental Engineer
ORD/NERL/ERD
(706) 355-8124
Bird.Sandra@epa.gov

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Scent detection dogs have been used extensively in law enforcement and military applications to detect narcotics and explosives for over 30 years. Controlled laboratory studies have documented accurate detection by dogs of specific compounds associated with explosives and narcotics at air concentrations below 1 ppb. Relatively few applications have taken advantage of this canine capability in the environmental arena. Dogs can serve as a rapid screen to indicate the presence of a substance in air, soil, or even water. Dogs are capable not only of indicating the presence of a compound, but also of moving up-gradient toward the source of the material and discriminating between closely related compounds. Benzene, toluene, ethylene, and xylene, major constituents of gasoline, are frequent culprits related to vapor intrusion into buildings from contaminated groundwater. Since indoor air contamination can also occur from household sources, responsibility is often contested. Canines can provide an effective approach for screening contaminant source location, as well as simply indicating the presence of a contaminant and significantly reducing required sampling costs. This research demonstrates the use of dogs as a tool in vapor intrusion investigations, with an emphasis on evaluating the cost-effectiveness of employing them, developing quality assurance strategies in support of their use, and protecting the dogs from exposure to harmful levels of chemicals. This project is a unique application in the use of scent detection canines in an environmental application. A demonstration of canine scent detection capabilities will be provided along with the poster.